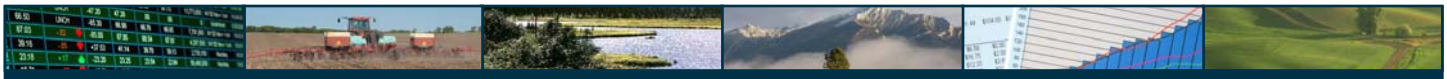


Welcome to the Environmental Markets

New Approaches for Natural Resources Management Webinar

Presented by Resource Economics and Social Sciences Division, NRCS, and The Council on Food, Agricultural and Resource Economics

Background

The agricultural economics profession has developed valuable information and insights into these markets. This Web seminar is sponsored by the Resource Economics and Social Sciences Division, NRCS, and The Council on Food, Agricultural and Resource Economics (C-FARE – www.cfare.org). It is offered without a fee, with a priority to NRCS staff, to discuss environmental benefits and assist NRCS to better recognize its role in these markets.

Agenda

Monday, February 23, 2009 *(All times EST)*

Please click on each agenda item to take you to the summaries

1:00-1:10 **Introduction**
Dr. Steven Kraft, Southern Illinois University
(Moderator)

1:10-1:30 **Overview Speaker**
Dr. Silvia Secchi, Southern Illinois University

1:30-1:50 **Carbon Markets Speaker**
Dr. Bruce McCarl, Texas A&M University

1:50-2:10 **Water Markets Speaker**
Dr. Brent Sohngen, The Ohio State University

2:10-2:30 **Habitat Markets Speaker**
Dr. Stephen Swallow , University of Rhode Island

2:30-2:50 **NRCS Overview Speaker**
Carl Lucero,
Bridging the gaps to the NRCS mission

2:50-3:30 **Moderator-led discussion**
questions from participants

About the Moderator

Steven Kraft
Chair, Department of Agribusiness Economics
Southern Illinois University Carbondale

Phone: (618) 453-2421
E-mail: sekraft@siu.edu

Dr. Steven Kraft is Chair of the Department of Agribusiness Economics and Co-director of the Environmental Resources and Policy Ph.D. program. He also provides mediation services to all USDA cooperators in Illinois through the Illinois Agricultural Mediation Project. His specialty areas are soil and water conservation policy, watershed planning, ecosystem services, and natural resources economics and policy. Recent publications include The Law and Policy of Ecosystem Services (Island Press, 2007) with JB Ruhl and Chris Lant. He teaches farm management, natural and environmental economics and policy, and social perspectives on environmental issues. He earned his doctorate degree from Cornell University in 1980. Dr. Kraft was named a fellow of the Soil and Water Conservation Society in recognition of his contributions to soil and water conservation policy through his research.

References & Resources

To view information from a workshop on "Environmental Credits Generated Through Land-Use Changes: Challenges and Approaches" please visit: **http://www.envtn.org/LBcreditsworkshop/agenda.htm**

To view the website "Ecosystems Marketplace" visit: **http://www.ecosystemmarketplace.com**

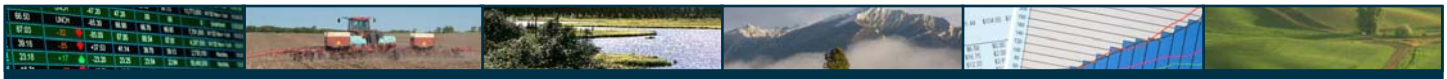
To view the Forest Service website on ecosystem services please visit: **http://www.fs.fed.us/ecosystemservices/**

For information on Species Banking visit: **http://www.SpeciesBanking.com/**

Voluntary Reporting of Greenhouse Gases-Carbon Management Evaluation Tool please visit: **http://www.cometvr.colostate.edu/**

AAEA Policy Journal Choices information on Ecosystem Services - **http://www.choicesmagazine.org/magazine/block.php?block=9**

C-FARE and Ecological Society of America webinar on ecosystem services **http://live.blueskybroadcast.com/bsb/client/CL_DEFAULT.asp?Client=122&PCAT=760&CAT=1056**



Environmental Markets
New Approaches for Natural Resources Management

An Overview
Presented by Silvia Secchi

Definition of **environmental credit trading**: two parties enter into a voluntary agreement. One party undertakes an activity that provides environmental benefits, in exchange for payment from the other party.

There are two broad categories under which credit trading takes place. In both these cases, there is some type of underlying regulation that puts a limit on the amount of environmental damage, (or alternatively, mandates some level of environmental improvement).

Under **baseline-and-credit trading**, a seller not required to meet environmental performance improvements (not regulated) sells, (directly or through a facilitator, credits for environmental improvement to a buyer that is required to make improvements. E.g. Watershed credits between water treatment plants and farmers.

Under a **cap-and trade program**, both the buyer and seller of credits are under an obligation to improve their environmental performance. E.g. The market for sulfur dioxide emission reduction for coal fired power plants.

For example, think about the issue of limiting nitrogen losses on surface water in a watershed. The government could ban fall fertilizer applications outright, or it could institute a cap and trade program under which farmers are allocated certain number of permits. Each farmer knows how costly it would be to eliminate fall fertilizer applications, change type of fertilizer, move to precision applications – even switch crop rotations to reduce nutrient losses. If farmers are given permits, they take all these factors into consideration in deciding how many credits to buy/sell. It is simply impossible for a centralized agency to know farmers' cost structures very well, so the regulation – however well designed – will not take them all into account and will be inefficient. In a market, however, the aggregated cost of achieving a given level of environmental protection is minimized.

The **fundamental reason** to introduce trading in environmental goods is that markets work well at achieving the allocation of goods and services in the least costly way. The reason is that only individuals really know what the real cost of an action is. When they operate in a market, they use that knowledge to make a decision. Typically, governments do not have such good information, so when they regulate they will not be able to take into account the differences in costs and will be less efficient.

Our example also shows how markets may provide incentives for the adoption and diffusion of cheaper and better pollution control technologies. A private company may develop better precision farming technology, for example, so that the farmers adopting it can sell more credits on the market.

If markets are so great, why are they not there already? Markets for environmental goods often involve goods that once provided, can be enjoyed by many people, including those that did not help pay for them, so farmers are unable to collect profits by providing environmental goods. These markets also involve offsite effects – a farmer's tillage choice affects carbon sequestration levels, which in turn affect global climate change. A farmer alone, making profit-based decisions cannot take into account the impact of his tillage choices on climate.

Therefore, it is important to keep in mind that markets for environmental goods often require government involvement, particularly to get started. It is also important to keep in mind that credit trading can complement traditional approaches in improving our environment. Credit trading can work in conjunction with regulation and financial and technical assistance programs. An analysis of the specific issues present in each instance will help determine how best to implement a market-based solution. There is no one-size-fits-all solution, and the on-the-ground knowledge and expertise of NRCS personnel is crucial to the development of well functioning markets, and their integration with other programs to improve environmental performance.

There are several **basic features of an efficient market** to keep in mind:

1. There must be **"many" willing buyers and sellers**, so that no single buyer and seller has too much control over prices. In practice, this means that the market has to be "big enough", and this will depend on the farm size in the area and the specifics of the market.
2. The **ownership of environmental goods must be clear**.

3. The **good must be clearly defined and measurable**. This means that methodologies to monitor and quantify the good being traded must be robust, i.e. reasonably accurate and inexpensive.
   - The permits can be defined on the basis of on-farm practices (inputs into the production of the environmental good) or as changes in the level of the environmental good (output). So far government programs have tended to pay by practice, because it is simpler and cheaper to monitor. Input oriented payments work well if there is a good correlation between the two measures (reducing fertilizer applications tends to reduce nitrogen loads in streams).
   - In the case of input-oriented programs, all activities need to be converted into a common unit of measurement or currency that relates to their impact on the environmental good (for example, convert the impact of cover crops, no fall fertilizer application etc. into N load reductions). The land owners, and not only trained technicians/scientists, need to be able to understand how the effect of their on-farm practices on the environmental good are calculated.
   - If the activities have different levels of permanence (conservation tillage and tree planting for carbon sequestration, for example, have different time horizons), there needs to be a clear standardized unit of trade that achieves a good balance between the need to keep transaction costs low by not re-negotiating too often and the need to periodically re-negotiate contracts to incorporate changes in the cost structure of market participants.
4. **Prices must be known**.
5. **Transaction costs must be low**, otherwise the markets will not work efficiently.
   - The small scale of agricultural producers compared to the size of some potential markets means that some entities may work as aggregators and bundle up activities/credits from farmers and sell them to the market. This is likely to be the case for carbon, for example, because that market is global in scope.
6. There must be no barriers to entry, which is linked to point 1.

The mitigation markets NRCS personnel will often deal with will be baseline-and-credit markets. The challenge in this type of markets is to obtain **real improvement of environmental quality**. The reason this is a challenge is that the buyers (often point sources) are allocated a regulatory cap of emissions/pollution, which they can achieve by improving their environmental performance or buying credits, but the farmers (aka non-point sources) are not subject to a cap. Therefore, the farmers are not subject to a specified baseline, so pollution reductions must be credited relative to an unobservable hypothetical - what the farmer would have emitted in the absence of the regulation. This creates the possibility for paper trades, where a regulated source is credited for an emissions reduction by an unregulated source that would have taken place anyway. This is paying money for nothing, or what is called lack of additionality. The solution is to identify activities for which the non-point sources can receive credit that will truly be additional to what they were doing/would be doing and that improve environmental quality. This is one of the reasons why the selection of activities to be included in the market, and the definition of a common unit of exchange or currency is the most important thing to get right or not terribly wrong.

About the Author

Silvia Secchi
Assistant Professor,
Department of Agribusiness Economics
Southern Illinois University Carbondale
Carbondale, Illinois 62901

Phone: (618) 453-1714
e-mail: ssecchi@siu.edu

Dr. Silvia Secchi received her Master's Degree in Agricultural Economics in 1995 from University of Reading and her Ph.D. in Economics from Iowa State University in 2000. Her work focuses on the interface between agricultural activities, agricultural and energy policy and the environment, particularly water quality and greenhouse gas emissions. Silvia's research integrates economic, geographical, and environmental models by using spatially explicit common units of analysis. She is involved in several interdisciplinary projects including one that addresses collaborative efforts on the economics of starch ethanol production in the Upper Mississippi River Basin and economic and environmental impacts of land use changes at various scales across the Midwest.

Contact Information

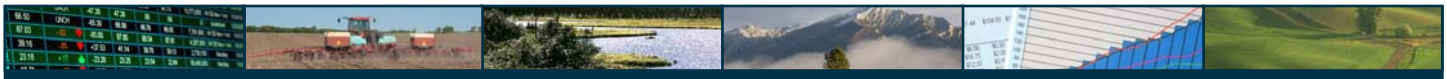
For more information on this Webinar or C-FARE, please contact our office or website at www.cfare.org

Tamara Wagester
Executive Director

900 Second Street, NE
Suite 205
Washington, DC 20002

(202) 408-8522 Phone
(202) 408-5385 Fax
tamarawagester@cfare.org

FARE The Council on Food, Agricultural & Resource Economics



Environmental Markets

New Approaches for Natural Resources Management

Carbon Markets

Presented by Bruce A. McCarl

Environmental markets provide an opportunity for agricultural producers to sell greenhouse gas (GHG) offsets including carbon dioxide (CO2) to those in need of cheap ways to reduce their net GHG emissions. The emergence of a GHG market represents a means to effectively induce changes in atmospheric CO2 concentrations towards desirable long term levels. Eighty-four percent of US CO2 emissions are from energy with forty-two percent resulting from coal fired electricity production and forty-two percent from petroleum. Agricultural production makes up 6% of CO2 emissions, 50% of methane, and 70% of Nitrous Oxide. Agriculture has a role in the reduction of CHG if the offsets are cheaper than alternative policy measures.

Environmental markets have developed in both Europe and the United States. Carbon exchanges in Europe offer a venue to reduce emissions and meet Kyoto obligations. In the United States, markets such as the voluntary Chicago Climate Exchange and state level markets have arisen. The US market lacks a large number of buyers and sellers and, as a result, is a niche market. More generally, the US market lacks a total national emissions limit (cap). Current legislation is considering imposing a cap plus alternative operating rules for markets to assist in GHG reductions.

International agreements are likely to stimulate greenhouse gas mitigation efforts but they are only the beginning with about 20 times the tonnage needed to stabilize atmospheric concentrations. Agriculture can participate either as a source of emission reductions or as a sink for carbon storage (sequestration). Emission trading markets are likely to emerge where agriculture could sell emission offsets. Potential options for agriculture include carbon sequestration from soil tillage changes, grassland conversions (to grass) and afforestation; methane emission reductions across manure lagoons, rice and animals; nitrous oxide emission reductions from fertilizer, manure and legumes; and biofuels.

Although agriculture can benefit from the trading markets, it will not reap the full benefits. The full carbon price will not accrue to agriculture because of various transaction costs. These costs arise from assembling contracts, measurement and monitoring. Transaction costs also result from the risks associated with prospective liens/liability on property, restrictions on future actions, dangers in early action and practice obsolescence.

It is likely that, agriculture will not receive the full CO2 price because of four international negotiation provisions plus brokerage fees. Permanence which includes the likelihood that some sequestered carbon might be emitted in the future (volatility), the fact that differential annual amounts of GHG activities generally arise over time, and leasing and contract liability terms.

Uncertainty about the sequestration rates and retention. Additionality, which concerns how much of the potential GHG offsets created by a project would have occurred in the absence of the program. Finally, leakage where actions in this country affect reactions elsewhere and a smaller global net emission reduction. Brokerage fees will involve aggregators who assemble agricultural offsets and sell them into a market that requires higher volumes and in the process keep part of the price for their efforts.

In conclusion, the use of markets for sell greenhouse gas (GHG) offsets including carbon dioxide (CO2) requires addressing a number of issues. Markets may exist but do not have many participants. Low current prices plus the niche nature of the market imply low current profitability and an effectively low level of opportunities for agricultural participation. Risks of early or eventual action further reduce incentives to enter the markets for GHG. For markets to operate efficiently there is a need for a cap plus rules that accommodate many forms of offsets including those in agriculture and forestry.

About the Author

Bruce A. McCarl
Department of Agricultural Economics
Texas A&M University

Phone: (979) 845 1706
Email: mccarl@tamu.edu

Webpage: agecon2.tamu.edu/people/faculty/mccarl-bruce/

Dr. Bruce A. McCarl is a Regents Professor and a Distinguished Professor of Agricultural Economics at Texas A&M University, a Fellow of the American Agricultural Economics Association plus is part of the Intergovernmental Panel on Climate Change that was a co recipient of the 2007 Nobel Peace Prize. Dr. McCarl has been on the Texas A&M faculty since 1985 and previously held positions at Oregon State and Purdue. His PhD was in Management Science from the Pennsylvania State University. He works on the economic implications of biofuels, global climate change and greenhouse gas emission reduction, as well as environmental, forestry and agricultural policy design. During the last few years he developed the economic parts of the U.S. Global Climate Research Program National assessments for both forestry and agriculture, worked on agricultural and forestry multistrategy assessment of climate change mitigation potential in conjunction with the US Kyoto Protocol negotiating team and served as a member of the IPCC Agricultural Mitigation chapter writing team while assisting the forestry team. He is the author of 193 journal articles and more than 400 other professional papers and presentations.

Contact Information

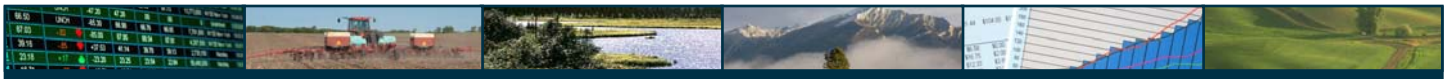
For more information on this Webinar or C-FARE, please contact our office or website at www.cfare.org

Tamara Wagester
Executive Director

900 Second Street, NE
Suite 205
Washington, DC 20002

(202) 408-8522 Phone
(202) 408-5385 Fax
tamarawagester@cfare.org

FARE The Council on Food, Agricultural & Resource Economics



Environmental Markets

New Approaches for Natural Resources Management

Water Quality Trading – Some Questions and Answers ?

Presented by Dr. Brent L. Sohngen

What is Pollution Trading? Typically, pollution trading programs are implemented when the cumulative emission from all contributing sources can be capped at some maximum level, and the individual sources can be measured. Allowances for emissions can then be distributed such that 1 unit of emission equals 1 allowance. Government agencies then reduce total pollution by reducing the number of allowances allocated. Allowances can be traded amongst the sources. With a sufficiently large number of sources involved in the trading program, a viable market will emerge. Viable pollution trading markets now exist for sulfur dioxide in the United States (begun in the 1990s), and carbon dioxide in Europe (begun in the 2000s).

Is a Market the Same as Trading? No, pollution trades and trading can occur with or without formal markets. A competitive market, however, can only exist if there are a large number of buyers and sellers, and other traditional economic conditions are met. If government allows it, however, pollution trading can occur without markets. Such trading will only occur if both sides can achieve something of value from the trade, and negotiate an agreeable price, or value, for the trade. As an example, states like Ohio have developed rules that allow water pollution permit holders (NPDES) to offset some of the responsibilities of their permits with a legally binding commitment to pay for pollutant reductions by nonpoint sources elsewhere in the same watershed. A single NPDES permit holder who pays farmers to reduce their pollutants engages in trading, but not a formal market.

Is it more difficult to establish a market with nonpoint sources of pollution? Yes, and there are two important reasons why. First, with the possible exception of large-scale livestock operations, nutrient emissions from agricultural sources are more difficult to measure. Cumulative emissions into streams are more uncertain due to uncertainty in the timing and scale of weather events and farm management activities (e.g., nutrient applications, harvest, manure application, plowing). As a result, it would be very difficult to assign specific allowances to all individual landowners in a watershed. Second, there currently are few, if any, legally binding mandates on nutrient pollutants from nonpoint sources like farms. Thus, one large set of buyers and sellers in a potential water quality market is not regulated. Without a binding commitment, one large segment of a potential market has little incentive to get involved.

Who would demand pollution reductions from agricultural sources? Anyone who has a federal or state issued permit to discharge pollutants into streams could in principle demand pollution reductions from agriculture. A typical trading program might get started when a point source is required to increase their pollution abatement in order to renew their permit to discharge. In lieu of making reductions within their own plant, the point source might be allowed by the controlling agency to purchase pollution abatement from nonpoint sources elsewhere in the watershed.

What are the benefits of a water quality trading program? This type of program has benefits for the point sources, the nonpoint sources, and the public. Point sources benefit by reducing the cost of each unit of pollution abatement. Nonpoint sources benefit in numerous ways. For instance, they may profit if they can produce pollution reductions for less than the program payments. Alternatively, on-farm improvements in productivity (e.g., conservation tillage) could reduce labor and other costs, or they could improve soil quality and hence long term crop productivity. Finally, the public benefits through lower costs for point sources that ultimately result in lower utility rates for waste water treatment. There also would be other ancillary benefits associated with nonpoint source pollution reductions, such as improved habitat or improved water quality elsewhere in the basin.

What role can NRCS and other local partners play in pollution trading? In programs where point sources are paying for pollution abatement on farms, NRCS and government partners such as Soil and Water

Conservation Districts (SWCDs) have a large and important role to play. These roles include: designing standards, implementing new practices, updating standards, defining costs.

Designing Standards: Ultimately, if agricultural sources of pollution are engaged in a trading program, they will be required to make some changes on their farms, such as installation of new technologies, use of new practices, or adoption of new management techniques. Through their role in allocating federal Farm Bill funds for conservation, NRCS is responsible for setting standards for most of the conservation practices that farmers may undertake. These standards have an immense impact on whether nonpoint source trading programs will work.

Implementing Practices: Aside from setting the standards, NRCS already plays an important role in helping landowners design conservation practices. From site visits, to recommendations on what to install and where to get funding, to actual engineering designs, NRCS personnel play a role in helping landowners negotiate the Farm Bill conservation programs. Trading systems, as they currently are constructed, are nearly identical to existing Farm Bill conservation programs. Although in recent years, NRCS has done less and less actual design work for landowners, NRCS personnel will still have important impacts on the tapestry of practices installed in a trading system when they do the work themselves, and when they review the work that external consultants do.

Updating Standards: NRCS also will have an important role in helping partners in the trading program understand the pollution abatement factors associated with different practices. Research through the Conservation Effects Assessment Program (CEAP) and other efforts undertaken by University or USDA-ARS partners will provide important insights into the effects the conservation programs actually have on pollution abatement in a watershed. Since not all watersheds have been or will be studied, NRCS likely will be called upon to help translate the results of existing studies to new project areas where trading programs are being implemented.

To some extent this last role has been pursued by consultants and University partners in some programs to date. Over the long run, one can imagine that the practice specifications and guidelines developed by NRCS include information on pollution abatement potential. This will require substantially more research than has currently been undertaken, but for agricultural sources to become legitimate trading partners in water quality trading programs, this step must undoubtedly be undertaken.

Defining Costs: One of the most important components of the farmer's decision to enter a trading program involves deciding whether it's worth it economically. Farmers will need to carefully review the potential costs versus the money they will make from the program. Traditionally, NRCS has estimated the costs of different kinds of practices in order to reimburse landowners for adoption through conservation programs, and that role remains important with trading programs.

About the Author

Dr. Brent L. Sohngen
Department of Agricultural, Environmental, and Development Economics
The Ohio State University

Phone: (614) 688-4640
Email: Sohngen.1@osu.edu

Dr. Brent Sohngen is a professor of environmental and natural resource economics in the Department of Agricultural, Environmental, and Development Economics at the Ohio State University. His primary research interests lie in modeling land use change, assessing the economic efficiency of alternative policy instruments for non point source water pollution control, and estimating the economic benefits of improving environmental resources. Sohngen has utilized market models to examine the implications of ecological change for timber markets, and to assess the costs of carbon sequestration in forests and agricultural soils. He leads an extension program in environmental and resource economics that provides resources on benefit cost analysis to Ohio policy-makers. Sohngen teaches a graduate and undergraduate course in micro-economic theory, and environmental and resource economics.

Contact Information

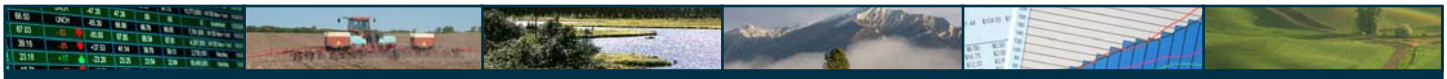
For more information on this Webinar or C-FARE, please contact our office or website at www.cfare.org

Tamara Wagester
Executive Director

900 Second Street, NE
Suite 205
Washington, DC 20002

(202) 408-8522 Phone
(202) 408-5385 Fax
tamarawagester@cfare.org

C-FARE The Council on Food, Agricultural & Resource Economics



Environmental Markets
New Approaches for Natural Resources Management

Habitat Markets Presentation
Presented by Stephen K. Swallow

Many ecosystem services are public goods. Examples include the aesthetic benefits of song birds or the pastoral views of a farm landscape, affecting the quality of life of rural or exurban communities. Public goods benefit many people simultaneously, so that providers are unable to exclude beneficiaries who have not yet contributed compensation for the cost of provision. As a result, individual beneficiaries have strong incentives to "wait" for someone else to "do the right thing;" each individual has an incentive to "free ride" on the contributions of others. Therefore, potential providers of public goods cannot capture the full benefit of their actions, so their incentives to provide such ecosystem services are significantly restricted and possibly eliminated. Markets generally cannot form and the commercial economy may provide substantially fewer ecosystem services than can be justified. Such justification arises from the willingness of beneficiaries to contribute sufficient financial support for provision in order to cover the costs of provision. Unfortunately, willingness may reflect value but be insufficient to generate actual revenues. In the absence of markets, public goods are often provided outside the economy or as a by-product of other activities – such as the incidental provision of wildlife habitat services or a scenic farm landscape that arises from normal farm operations.

Government can use its authority to coerce business or individuals to recognize valuable ecosystem services through regulatory approaches or through incentive-based or market-based approaches administered by government, such as through direct payments or establishing a cap-and-trade program. While significant achievements may result, government action often involves costs of bureaucracy or information gathering that markets handle more cheaply, and government may not be particularly nimble or precise in identifying valuable opportunities.

Private, non-profit organizations may be relatively nimble, but non-profit organizations face the same problem as markets in that "free-riders" may wait for others to do the right thing. Thus, 90% of listeners to National Public Radio are not contributors, many duck hunters do not join Ducks Unlimited, and hikers may not join their regional Trail Club. Moreover, the donations approach to fundraising often separates individual payment from the specific goods being provided, with funding campaigns displaying an open-ended nature that achieves great successes but dilutes the tie between actions desired by donors and products delivered.

Private market actions could provide an additional set of tools to address the public goods in ecosystem services. Through the availability of market incentives, private entrepreneurs would independently, and cost-effectively, seek ways to capture consumer benefits realized as revenues. Thus, a farmer being paid to manage a hayfield for grassland nesting birds automatically starts thinking about the tradeoffs among warm-season or cool-season grasses, grazing and harvest schedules, seeking to balance the needs of a cow herd with his growing season and the density and height of grass preferred during the May-July nesting season. Private markets directly tie both the consumer value of beef or dairy products with the value of aesthetically pleasing birds for the neighboring exurban residents. By allowing consumers to express their values as revenues, markets eliminate the challenge that government and philanthropic agents have in identifying and acting on those values.

Incentives drive producers to provide public goods and consumers to contribute (or not contribute) revenues toward provision. Experimental economists have been testing incentive-mechanisms that reduce the advantage of individuals to free ride on others, thereby raising the potential revenues that producers can capture from beneficiaries of public goods.

Funded by the USDA/NRCS/CIG program, environmental economists at the University of Rhode Island used incentive-mechanisms to create a market in which farmers may sell the habitat services of hayfields for grassland nesting birds to residents of an exurban community who value a well-functioning ecosystem as part of their quality of life. In this test market, the university serves the role of an entrepreneur who acts as a broker between farmers and residents. The market begins with dividing the 2800 residential homes in Jamestown, RI, into groups, and assigning a pre-established farm contract to each group. Each farm negotiates for compensation in return for agreeing to restrict or eliminate grazing and to delay mowing of hay from a 10-acre field from the last week of May to the first week of July. However, the farmer is only paid if the resident's-group to which his or her field was assigned comes forward with sufficient funds to pay the cost of the contract. If the group fails to provide sufficient revenues, then the farm is released from the contract (and notified in early May). Other farm communities may need earlier notification, depending on the unique circumstances relevant to their operations.

During March and April of 2007 and 2008, the university conducted a direct-mail marketing campaign with support from full-page advertisements in the local Jamestown Press, which is distributed to all mailing addresses weekly. Advertisements and a web site were presented under the trade-name Nature Services Exchange of Jamestown, established in partnership with EcoAsset Markets Inc. Advertisements focused on the nesting season of the Bobolink, which performs its territorial calls in-flight, making it visible over open hayfields, with a unique song that reminds many listeners of the robot-character "R-2-D-2" in Star Wars.

Direct mail materials offered residents the opportunity to buy into the farm-wildlife contracts, with a full "money back guarantee" that if their group's contract was not held in force, money would be refunded. In addition, under various rules-of-trade, these offers promised that if a group generated more money than was necessary to pay the costs of their group's contract, excess money would be rebated. Three rebate rules were designed to generate revenues. For example, under a "proportional rebate rule," if the group generates a fund in which X% of the money was in excess, above the farmer's negotiated contract-price, then each buyer-contributor in that group received a rebate of X% of their contributions. Under other rules, a cap-price was determined and buyer-contributors received a rebate of any money offered above the cap-price.

Statistical results show that 70% of the individuals who chose to participate in the market would pay from >$19 to >$62 for a 10-acre field; this dollar-value range reflects a number of differences in how offers were solicited. The most promising combination of presentation features shows that for 100 participants, the market can generate around $4500 per 10-acre hayfield. While additional details must be developed these results indicate a potential to develop markets for even a relatively intangible, aesthetic ecosystem service (bobolink habitat).

About the Author

Stephen K. Swallow
Department of Environmental
and Natural Resource Economics
University of Rhode Islan
Kingston, RI 02881

Phone: 401-874-4589
Email: swallow@uri.edu

Dr. Stephen Swallow's research in environmental economics concerns methods to estimate the value of non-market goods, economics of ecosystem management, eco-friendly marketing, and forest management practices for the conservation of seasonal wetlands and sensitive species. Dr. Swallow was a member of the Fire Science Review Panel for the US Forest Service. He received his B.S. in Wildlife Ecology and Natural Resources from Cornell University, and both his M.S. and Ph.D. in Resource Economics from Duke University.

Contact Information

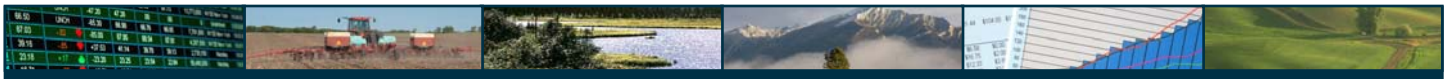
For more information on this Webinar or C-FARE, please contact our office or website at www.cfare.org

Tamara Wagester
Executive Director

900 Second Street, NE
Suite 205
Washington, DC 20002

(202) 408-8522 Phone
(202) 408-5385 Fax
tamarawagester@cfare.org

FARE The Council on Food, Agricultural & Resource Economics



Environmental Markets
New Approaches for Natural Resources Management

Background Information from Natural Resources Conservation Service

Presented by Carl F. Lucero

This Nation's economy is based on the principle that the free market provides the incentives for progress and success. U.S. Farmers, ranchers and forestry owners produce a wide variety of commodities for food, fuel, and fiber in response to market signals. Farms and forests also contain significant amounts of natural resources that can provide a host of environmental services, including cleaner air and water, flood control, and improved wildlife habitat. In the past, however, the value of environmental benefits produced by good stewards of agricultural and forest lands were not expressed in terms that enabled a market-based approach to conservation. Government provided the incentives that the free market could not, primarily by sharing the cost of implementing conservation practices that were recognized as having benefits beyond a producer's own fields and forests.

Market based approaches are an innovative way to stretch resources, to take conservation beyond the boundaries of the farm, ranch and forest, while preserving productivity, maintaining and enhancing landowner livelihoods and producing environmental benefits. Market based solutions to nonpoint source problems provide flexibility to undertake actions that have the lowest cost and result in more cost-effective achievement of natural resource conservation and environmental goals compared to traditional command and control approaches.

The efficient operation of a market is based on an understanding of credits, trading, and banking as well as the interaction of society and our natural resources. Market based approaches work by placing a price on conservation efforts. By establishing a price for these efforts market based approaches harness the power of markets in the service of conservation. They can do this directly through taxes or subsidies or indirectly through creation of trading programs or product labeling.

Payment for environmental solutions that provide benefits for others is an opportunity for landowners to receive financial returns on their working land in addition to those associated with traditional agricultural and forest products. Natural revenue streams will help cover the costs of owning and managing land, and provide new incentives for landowners to retain their holdings. Valuing environmental services encourages good stewardship and restoration of degraded areas, and supports innovative solutions to financing continuing production of agricultural and forest products. Redefining the value of working lands will increase the Nation's appreciation and support of private lands, and will help the advancement of cooperative conservation across the landscape.

While many private sector markets for environmental goods and services are establishing, many are in their infancy, and developing and promoting consistent USDA policy associated with these markets can further integrate agricultural and forestry sectors to further participate in such markets. Existing markets include: water quality, water quantity, greenhouse gases, wetland mitigation banking, endangered species habitat conservation banking, endangered species safe harbor agreements, stream mitigation banking, and regional storm water management banking.

By incorporating market mechanisms into our existing conservation programs, developing outreach and capacity building opportunities, and defining the process of an organized environmental credit trading market that provides a basis for implementing frequent and continued trading, USDA leverages limited public funds with a new revenue stream to expand our conservation efforts.

The Food, Conservation, and Energy Act of 2008 (Farm Bill) passed May 22, 2008, directs the Department of Agriculture (USDA) to establish technical guidelines and science-based methods to measure the environmental services benefits from conservation and land management activities in support of emerging environmental services markets.

To facilitate full consultation, leverage expertise, and ensure consistency across the federal government, USDA has established a government-wide Environmental Services Standards Board. The purpose of this Board is to develop and approve the technical guidelines and science-based methods to assess environmental service benefits of conservation and land management. The Board will focus on guidelines and methods for quantifying the air quality, water quality, greenhouse gases, wetlands and endangered species benefits of conservation and land management practices.

USDA is embarking on a new initiative that involves looking at markets and the philosophy behind their success. USDA has created an Office of Ecosystem Services and Markets directly under the Secretary to provide technical and administrative support for the Board and to expand the efforts of USDA in the area of environmental markets.

The previous three presentations described the prospect of environmental markets, how they work, who the players are, and the environmental benefits these markets bring. They also described some barriers associated with environmental markets and what is needed for these markets to succeed.

This presentation will review those barriers and what USDA in general and NRCS in particular are doing to overcome these challenges. I will cover some major activities we are implementing to promote capacity building and enable landowner participation in environmental markets. I will also touch on the tools, models and references, as well as the partnerships we are developing to promote environmental markets. And, I will describe the role of the new USDA Office of Ecosystem Services and Markets, the makeup of the Environmental Services Board, its charge, and the process we plan to use in developing uniform guidelines and protocols.

About the Author

Carl F. Lucero
National Leader for Clean Water
USDA NRCS
Acting Deputy Director,
Office of Ecosystem Services and Markets
Phone: (301) 504-2222
e-mail: carl.lucero@osec.usda.gov

Mr. Carl Lucero guides USDA on water quality issues and leads the USDA effort on Market based Conservation where he developed the USDA Policy on Market Based Approaches and drafted a new element on Environmental Services and Markets for the 2008 Farm Bill. In this capacity, Carl played an integral role in creating a new USDA Office of Ecosystem Services and Markets where he is currently acting as the Deputy Director for Water Markets. He is a 28 year professional of the Natural Resources Conservation Service. In the late 90's Carl moved to Colorado where he accepted a 5 year assignment with the EPA as the NRCS Liaison developing partnerships, promoting the watershed approach and working on various activities related to the Clean Water Action Plan. In 2001, Carl returned to NRCS in the Animal Husbandry and Clean Water Division of National Headquarters in Washington, DC where he continues his partnership work with EPA and other Federal partners on water quality policy issues. He has also developed and is implementing Environmental Credit Trading Partnership agreements with the EPA and the Fish and Wildlife Service.

Carl grew up in Santa Fe, New Mexico and graduated from the University of New Mexico with a bachelor's degree in Civil Engineering. He also completed the Key Executive Leadership Program offered through American University.

Contact Information

For more information on this Webinar or C-FARE, please contact our office or website at www.cfare.org

Tamara Wagester
Executive Director

900 Second Street, NE
Suite 205
Washington, DC 20002

(202) 408-8522 Phone
(202) 408-5385 Fax
tamarawagester@cfare.org

FARE The Council on Food, Agricultural & Resource Economics